



MPE/RF EXPOSURE REPORT

FCC CFR 47 Part 1.1310

Report No.: RDWN71-U2 MPE FCC Rev A

Company: Radwin Ltd.

Model: AP0260210

MPE/RF EXPOSURE REPORT

FROM



Evaluation of: AP0260210

To: FCC CFR 47 Part 1.1310

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1. MAXIMUM PERMISSABLE EXPOSURE

Calculations for Maximum Permissible Exposure Levels

$$\text{Power Density} = P_d (\text{mW/cm}^2) = \text{EIRP} / (4 * \pi * d^2)$$

$$\text{EIRP} = P * G$$

P = Peak output power (mW)

G = Antenna numeric gain (numeric)

d = Separation distance (cm)

$$\text{Numeric Gain} = 10 ^ (G (\text{dBi}) / 10)$$

Equipment is professional installation subject to Radiation Exposure limits for Occupational/Controlled Exposure per FCC CFR 47 §1.1310(e)(1) Table 1 to Limits for Maximum Permissible Exposure (MPE). These calculations represent worst case in terms of the exposure levels. Point to Point operation exposure was assessed for lowest and highest directional antenna gains (15dBi and 31dBi).

1.1 Evaluation for each band.

Point to Multi Point Operation

Freq. Band (MHz)	Ant Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Power Density (mW/cm ²) @ 20cm	Power Density Limit (mW/cm ²)	Min Calculated safe distance for Limit (cm)	Calculated Power Density (mW/cm ²) @ Safe Distance
Point to Multi-Point								
5150.0 - 5250.0	10.00	10.00	25.98	396.28	0.788	5.00	7.94	5.00
5725.0 - 5850.0	10.00	10.00	25.97	395.37	0.787	5.00	7.73	5.00

Note1: for mobile or fixed location transmitters the minimum separation distance is 20cm, even if calculations indicate the MPE distance to be less.

Point to Point Operation 15dBi antenna Calculated minimum safe distance = 22 cm

Freq. Band (MHz)	Ant Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Power Density (mW/cm ²) @ 22cm	Power Density Limit (mW/cm ²)	Min Calculated safe distance for Limit (cm)	Calculated Power Density (mW/cm ²) @ Safe Distance
Point to Point								
5150.0 - 5250.0	15.00	31.62	29.39	868.96	4.518	5.00	20.91	5.00
5725.0 - 5850.0	15.00	31.62	29.79	952.80	4.954	5.00	21.90	5.00

Point to Point Operation 31dBi antenna Calculated minimum safe distance = 142 cm

Freq. Band (MHz)	Ant Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Power Density (mW/cm ²) @ 142cm	Power Density Limit (mW/cm ²)	Min Calculated safe distance for Limit (cm)	Calculated Power Density (mW/cm ²) @ Safe Distance
Point to Point								
5150.0 - 5250.0	31.00	1258.93	30.0	1000.0	4.968	5.00	142.0	5.00
5725.0 - 5850.0	31.00	1258.93	30.0	1000.0	4.968	5.00	142.0	5.00

1.2 Assessments for simultaneous operation

Point to Multipoint

Freq. Band (MHz)	Ant Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Safe Distance for Summation (cm)	Power Density Limit (mW/cm ²) E _{ref}	Power Density (mW/cm ²) E _i	Summation E _i /E _{ref}
5150-5250	10.0	10.00	25.98	396.28	20	5.00	0.788	0.1576
5725-5850	10.0	10.00	25.97	395.37	20	5.00	0.787	0.1574
Total Evaluation:								0.315

The Total Evaluation was calculated using the formula:

$$\sum_{i=1}^n E_i / E_{ref} \leq 1$$

Where

E_i: calculated E-field Strength for transmitter

E_{ref}: E-field strength related limit

Note1: for mobile or fixed location transmitters the minimum separation distance is 20cm, even if calculations indicate the MPE distance to be less.

Point to Point Operation 15dBi antenna Calculated minimum safe distance = 31 cm

Freq. Band (MHz)	Ant Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Safe Distance for Summation (cm)	Power Density Limit (mW/cm ²) E _{ref}	Power Density (mW/cm ²) @Calc Safe Distance E _i	Summation E _i /E _{ref}
5150-5250	15.0	31.62	29.39	868.96	31	5.00	2.276	0.4552
5725-5850	15.0	31.62	29.79	952.80	31	5.00	2.495	0.4990
Total Evaluation:								0.954

The Total Evaluation was calculated using the formula:

$$\sum_{i=1}^n E_i / E_{ref} \leq 1$$

Where

E_i: calculated E-field Strength for transmitter

E_{ref}: E-field strength related limit

Assessment for simultaneous operation

Point to Point Operation 31dBi antenna Calculated minimum safe distance = **201 cm**

Freq. Band (MHz)	Ant Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Safe Distance for Summation (cm)	Power Density Limit (mW/cm ²) E _{ref}	Power Density (mW/cm ²) @Calc Safe Distance E _i	Summation E _i /E _{ref}
5150-5250	31.00	1258.93	30.0	1000.0	201	5	2.480	0.496
5725-5850	31.00	1258.93	30.0	1000.0	201	5	2.480	0.496
Total Evaluation:								0.992

The Total Evaluation was calculated using the formula:

$$\sum_{i=1}^n E_i / E_{ref} \leq 1$$

Where

E_i: calculated E-field Strength for transmitter

E_{ref}: E-field strength related limit

Specification - Maximum Permissible Exposure Limits

The Limit is defined in Table 1 of FCC §1.1310.

Equipment is professional installation subject to Radiation Exposure limits for Occupational/Controlled Exposure per FCC CFR 47 §1.1310(e)(1) Table 1 to Limits for Maximum Permissible Exposure (MPE).



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